Volunteer Lake Assessment Program Individual Lake Reports

HAUNTED LAKE, FRANCESTOWN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	3,776	**Max. Depth (m):**	5.2	**Flushing Rate (yr^{-1})**	5.4
Surface Area (Ac.):	171	**Mean Depth (m):**	2.4	**P Retention Coef:**	0.52
Shore Length (m):	3,400	**Volume (m^3):**	1,361,500	**Elevation (ft):**	636

TROPHIC CLASSIFICATION

Year	Trophic class
1980	EUTROPHIC
2002	MESOTROPHIC

KNOWN EXOTIC SPECIES

Variable Milfoil

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

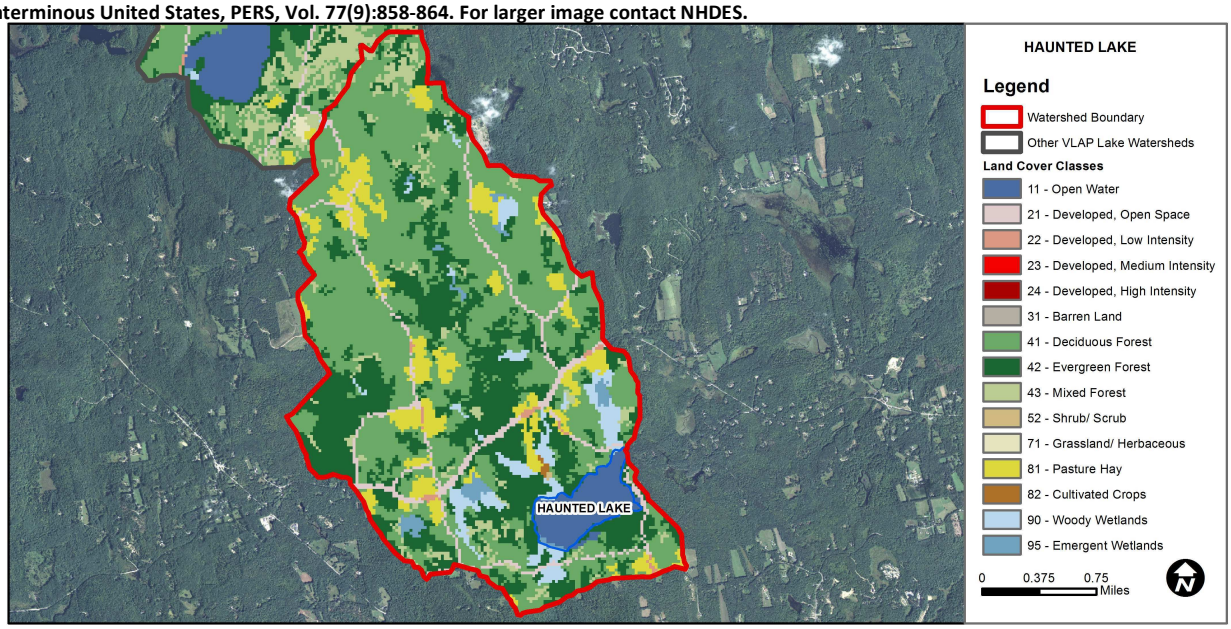
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Encouraging	>2 samples exist that are > 75% of geometric mean criteria, but not enough samples to calculate geomertic mean. No single sample exceedances. More data needed.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

HAUNTED LAKE - TOWN BEACH	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

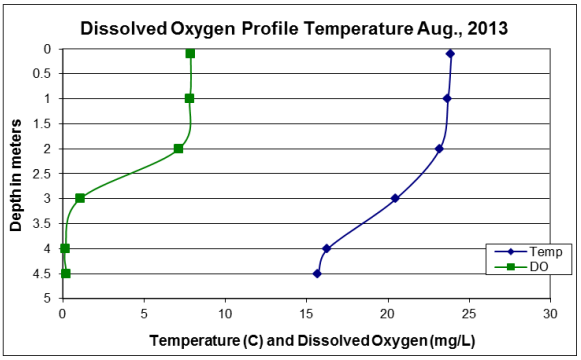


Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	3.69	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	4.14	Deciduous Forest	46.64	Pasture Hay	8.59
Developed-Low Intensity	0.39	Evergreen Forest	27.26	Cultivated Crops	0.09
Developed-Medium Intensity	0	Mixed Forest	3.98	Woody Wetlands	3.98
Developed-High Intensity	0	Shrub-Scrub	0.03	Emergent Wetlands	1.24

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
SCOBIE POND (HAUNTED LAKE), FRANCESTOWN, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were elevated and indicative of an algal bloom in August. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity levels were average and slightly greater than the state median. Historical trend analysis indicates relatively stable epilimnetic conductivity with moderate variability between years.
- **TOTAL PHOSPHORUS:** Epilimnetic and hypolimnetic phosphorus levels were the highest measured since monitoring began, much greater than the state median, and the cause of the algal bloom. Historical trend analysis indicates significantly increasing (worsening) epilimnetic phosphorus since monitoring began. Inlet and Outlet phosphorus levels were average, however the Inlet has a history of elevated phosphorus.
- **TRANSPARENCY:** Transparency was average for the pond and was likely was not affected by the algal bloom potentially because the algae were concentrated at a lower depth. Historical trend analysis indicates highly variable transparency between years.
- **TURBIDITY:** Epilimnetic, Inlet and Outlet turbidity were relatively low. Hypolimnetic turbidity was elevated potentially due to a layer of algae, sediment and/or organic material released under anoxic conditions.
- **PH:** Hypolimnetic pH levels were less than desirable range 6.5 - 8.0. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.
- **DISSOLVED OXYGEN:** Dissolved oxygen levels were depleted to less than 1.0 mg/L in the hypolimnion. When dissolved oxygen levels get below 1.0 mg/L, phosphorus that is typically bound in the sediment may be released into the water column.
- **RECOMMENDED ACTIONS:** The increasing phosphorus trend and variably elevated algal concentrations may be a result of various elements such as the increased frequency and intensity of storm events and Variable milfoil treatments. To better assess seasonal water quality and historical trends, increase monitoring frequency to three times per summer, typically June, July and August. Stormwater runoff can transport sediments, nutrients and other pollutants into the pond. Encourage lake residents to manage stormwater runoff from their properties utilizing DES' "Homeowner's Guide to Stormwater Management".



NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

Table 1. 2013 Average Water Quality Data for SCOBIE POND

Station Name	Alk.	Chlor-a	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	uS/cm	ug/l	m		ntu	
					NVS	VS		
Epilimnion	8.00	16.0	63.8	26	2.50	3.00	1.08	6.80
Hypolimnion			69.1	26			4.01	6.18
Inlet			64.1	15			0.90	6.84
Outlet			64.2	17			0.86	6.69

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
Conductivity	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Degrading	Data significantly increasing.